GEMINI
HIGH PURITY WATER SYSTEM

Operation & Maintenance Manual

Ver 2.1

Thank you for purchasing the Gemini High Purity Water Dispensing System. For optimum performance and safety please read and follow these instructions carefully.

You have a quality, world class water treatment system that will provide ultrapure water for many years of trouble free operation. Years of engineering and practical experience went into manufacturing this appliance which will dispense water exceeding every requirement for Type I water purity. To assure that you operate and maintain this unit properly and safely please read this manual carefully.

In order that we may keep you informed regarding your unit, please take a moment to complete and mail the owner registration card provided with this appliance.

If you have any questions concerning the operation of the unit, or need service, refer to section 11.0 "REQUESTING SERVICE". When requesting service you will need the model and serial number, as well as the purchase date of your unit. For your convenience record this information below:

Model Number: _____ Date: _____

Serial Number: _____ Dealer: _____

Contact: _____ Phone: _____

Cartridge #1 _____ Part Number _____

Cartridge #2 _____ Part Number _____

Cartridge #3 _____ Part Number _____

Options Installed: _____

_____

_____

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Table of Contents

Section	Description
1.0	Important Safeguards
2.0	Glossary of Terms
3.0	General Description
3.1	Principles of Purifying Water
4.0	Product Specifications
5.0	Setting up and Using Your GEMINI System
5.1	Setup
5.2	Installing the Water Purifying UV lamp
5.3	Installing the Water Purifying Cartridges
5.4	Applying Water Pressure and Bleeding Air
5.5	Applying Electrical Supply
5.6	Initial Polishing of new cartridges
5.7	Manual Dispensing of Water.
5.8	Programming and Dispensing a Batch of Water
5.9	Entering the SERVICE Mode
6.0	Display & Keypad Functions
7.0	Component Location & Identification
8.0	Maintenance
8.1	Replacing the UV lamp
8.2	Replacing the Resin & Filter Cartridges
9.0	Sanitization Procedure
10.0	Options and Accessories
11.0	Requesting Service
12.0	Charts and References
13.0	Warranty and Sales Contacts

1.0 Important Safeguards

When using this electrical appliance, basic safety precautions should always be followed including the following:

- READ ALL INSTRUCTIONS before use.
- Follow all ***WARNINGS*** and ***INSTRUCTIONS*** marked on the product.
- ***DO NOT*** immerse appliance in water or other liquid. Use a soft cloth and mild detergent when cleaning the cabinet or inside of the basin.
- ***DO NOT*** remove the top cover with unit power applied.
- ***DO NOT*** remove the ultraviolet lamp cover with unit power applied.
- ***DO NOT*** look directly at the ultraviolet lamp with unit power applied.
- ***DO NOT*** operate any appliance with a damaged or frayed power cord. To disconnect the power cord, grip the plug and pull it from the wall outlet, ***NEVER PULL ON CORD!***.
- ***DO NOT*** use this appliance outdoors. This appliance is intended for commercial, industrial, institutional, and professional use. Use of this product in a manner other than recommended herein, may void the warranty.
- **DO NOT** operate this appliance without it being connected to an adequate water supply and purged of air or damage to the pump may occur.
- ***DO NOT*** allow the cord to hang over the edge of a counter top or to touch hot surfaces. NOTE: If an extension cord is used, verify that the rating of the extension cord is equal to or greater than the rating of the appliance.
- Refer servicing of a defective or damaged unit to the factory or an authorized dealer.
- The use of attachments not recommended by the manufacturer may adversely affect the water purity or cause appliance damage and void its warranty.
- Avoid contacting the dispensing outlets with any foreign materials or hands to prevent contaminating them.

2.0 GLOSSARY of TERMS

The following terms are used throughout this text. Please take a few moments to familiarize yourself with them so that the information and instructions within are clear.

TERM	DESCRIPTION
LED	Light Emitting Diode, is a semiconductor indicating device used for the status indicators on the operator control panel of this unit.
LCD	Liquid Crystal Display, is a semiconductive display device used in the operator control panel of this unit.
TOC	Total Organic Carbon. The identification of organic carbon in water is helpful to assure successful water system operation. Trace organic chemicals can interfere with highly sensitive reactions and alter biological processes.
TDS	Total Dissolved Solids conduct electricity. This conductivity allows you to measure the concentration of salts directly in parts per million (ppm). Higher TDS increases the load on the deionizing cartridges.
SDI	Silt Density Index, is a scale for determining the amount of suspended solids in water that exceed 0.45 microns in size. A regulated flow is passed through a 0.45 membrane and the flow, time, and pressures are plotted to arrive at the index number. Higher SDI numbers result in premature fouling of resin and filters.
HPC	Heterotrophic Plate Count, formerly known as the standard plate count, is a procedure for estimating the number of live heterotrophic bacteria in water and measuring changes during water treatment and distribution.

3.0 GENERAL DESCRIPTION

This ultrapure water dispensing system has been engineered to consistently produce ultrapure water exceeding every requirement for ASTM Type I purity. The system is user-friendly, requires minimal space and maintenance, and harmonizes with existing laboratory equipment, all at a low initial investment and low operating cost.

A central dispensing station can supply the high quality water needs of one lab bench or an entire laboratory. The system may be wall mounted, set on a bench, or free standing where bench space is of a premium.

A unique feature of the Gemini is the Multi-Pass UV-treatment system, in which water passes through a special system of self-cleaning Teflon coils. While in these coils the water is exposed to the appropriate amount of ultraviolet wavelength to produce biological control. This patented technology, eliminates the performance deterioration that has been seen over time in other systems, and minimizes the maintenance and operating costs compared to other systems.

The influent water is treated by UV-irradiation prior to entering the polishing cartridges phase, thereby protecting the system's critical components from bio-contamination, biofilm buildup, and eventual spill over into the product water. The polished water is again UV-irradiated before leaving the unit. The Gemini delivers water of unsurpassed microbiological, organic, and ionic purity through the dispensing faucet which is continuously exposed to UV to prevent contamination via airborne bacteria.

A continuously cycling recirculation pump polishes the water assuring the highest quality water is always available, and a high resolution digital monitor is built-in for continuous display of water purity.

A microprocessor-based controller and operator keypad provides the user with several dispensing modes, while controlling the recirculation pump, monitoring overall system performance and providing system diagnostics. An easily accessible module compartment makes cartridge replacements a simple task. The built-in basin keeps any drips or spills under control.

Optional pretreatment systems are available to operate from tap water that does not meet feed water specifications. They can be packaged into the optional base cabinet. Reverse osmosis, distillation, or deionizing pretreatment may be necessary depending on the quality of your tap water for optimum performance of .

3.1 PRINCIPLES OF PURIFYING WATER

- Multi-Pass Ultraviolet Irradiation is used for organic reduction & bacterial reduction.
- Low TOC Mixed Bed Resins are used for polishing purity levels from pre-treated, filtered, RO, distilled, or DI water to 18.2 megohms resistivity.
- Microporous Resins are used, if necessary, for removing colloids and silica from supply water.
- Absolute rated cartridges for critical applications requiring particle retention of 0.05 through 0.45 micrometers.
- Ultrafiltration for pyrogen reductions to below 0.05 units.
- Dispenser outlet is continuously exposed to UV light to prevent retrograde contamination within the unit.
- Microprocessor, controller, keypad and display provide the user with a variety of operating modes, system monitoring, and flexibility for future enhancements.
- A high resolution digital purity monitor displays the ionic purity of the treated water in Megohms to two decimal places. The user never has to guess how pure the water is. The built-in pump will recirculate the water for the highest available purity.

4.0 PRODUCT SPECIFICATION

Design Features:

- Up to 3.7 lpm Continuous Flow On-Demand
- Exceeds 18 Megohm Type I Water
- Microprocessor Based Control
- Touch Key Dispensing
- 4 – User Programmable Batch Dispense Modes
- Digital Purity Monitor (standard)
- Automatic UV and DI filtration polishing
- Natural FEP, Kynar or Polypro Fittings & Tubing to Prevent Contaminants & Leaching.
- Silent Magnetic Drive Polishing Pump
- UV Protected Dispensing Nozzle
- Multi-Pass UV for Prevention of Bacterial Growth
- Built-in Basin (standard)
- Easy Access Replaceable Cartridge Compartment
- Provisions for up to (3) Cartridges in Combinations of Deionizing Resins & Filtration

Options & Accessories:

- 230 volt Operation power converter
- Combination UV for Bacteria and TOC
- Basin Drain Kit
- Wall Mounting Kit
- Base Cabinet and Waste Tank
- Pre-treatment Packages in Base Cabinet
- Teflon® Spray Gun with Recirculation
- 0.05 through 0.45 micron Final Filtration
- Ultrafiltration
- Sanitizing Kit

Typical Applications:

Media Prep
Tissue Culture
Glass Wash
DNA/NRA testing
Liquid & Ion Chromatography
Atomic Absorption

Physical Properties:

Dimensions (WxHxD):	50.8x55.3x47.6 cm [20x21.75x18.75 in]
Shipping weight:	25 kg [55 lbs]
Power Requirements:	115vac, 60hz, 105 watts [230 vac 50 hz available]

Feed Water Requirements:

Reverse osmosis, distillation, deionization or tap water that meets the following:

Conductivity:	< 150 uMhos
TOC:	< 100 ppb
Silt Density Index:	< 2
Pressure:	20 - 50 psi [1.4-3.5 bar]
Connection:	6' 3/8"OD pp tubing, & 1/2" MPT ftg
Temperature:	< 80°F (< 27°C)

Treated Water:

Dispense flow:	up to 3.7 lpm [1 gpm]
Purity:	> 18 M_/cm
TOC reduction:	> 94 %
Temperature rise:	< 5°c [9°F]above feed
Microorganisms:	< 10 cfu / 1000ml

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5.0 SETTING UP AND USING YOUR GEMINI SYSTEM

This section includes instructions for initial installation and start-up of the unit. Described herein are selection of unit location, unit unpackaging, and connection of unit to the water and electrical supplies. Also described are UV lamp installation, water treatment cartridge installation, purging of trapped air, and initial flush.

5.1 Setup

- Select a location for the unit which is in close proximity to the water supply and electrical supply connections. If the unit has been purchased with the *BASIN DRAIN* option, locate the unit near a sink or waste connection. If the unit has been purchased with the *WALL MOUNTING* option, select a wall which will support a 55 pound load on 16 inch stud centers or provide wall backing material.

- If the water supply does not already have an isolation valve for servicing the Gemini, install one ahead of the unit connection.

- Carefully remove all of the packaging material and tape used for shipping purposes, and position the unit in its operating location.

- Using the water supply connection kit provided with the unit, connect the unit to the supply. ***(DO NOT open the supply isolation valve at this time.)***

5.2 Installing the Water Purifying UV Lamp

WARNING!!

Hold the UV lamp ***ONLY*** by the plastic ends. **DO NOT** touch the glass bulb. Finger prints and oils from your hands will etch the glass and reduce UV life & performance.

If the lamp should become oily or dirty, clean it with a clean soft tissue or cloth wetted with isopropyl alcohol.

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- Remove the top cover by removing the phillips head screws that attach it to the top platform. Gently lift the top cover up and left, and set it aside. Carefully remove the UV bulb it from its protective package. Holding the lamp by the plastic ends, slide the 4 - prong end of the lamp into the 3/4" hole on the right side of the UV housing. Gently guide the lamp fully into the housing, up onto the lamp guide (far side), and into the socket. Leave the top cover off until start-up is complete.
- NOTE: The UV Bulb may have to be rotated so the 4 prongs align correctly with the bulb socket.

5.3 Installing the Water Purifying Cartridges

NOTE: For easy installation, the left and right hand cartridges must be installed first. Install the center filter last.

- Remove the stainless steel basin grill and set it aside. Remove the black front panel by pulling the bottom forward and out (it is held in place with four (4) magnetic catches), and set it aside. This accesses the water purifying cartridge compartment.

- There are three (3) cartridge housings with removable bowls having top O-ring seals. The bowls have right hand threads. Thread the bowl to the left to loosen and remove cartridges, and thread to the right to close and seal. Remove the three bowls at this time and set aside being careful not to lose the O-rings (store inside each bowl).

- Locate the water purifying cartridges selected for your system. They must be installed in the correct sequence to perform properly **(water flows left to right)**. The left and center cartridge positions always contain either AF-10-4010 or AF-10-4011, deionizer filters. The right position will contain either the submicron filter or another DI filter, depending upon the system options and setup.

- Drop the filter into the housing bowl. Check that the O-ring is on the upper seat inside the bowl (the O-ring must be correctly in place or it may become pinched or cause the housing to leak). Align the bowl and cartridge under the ***left (#1)*** position so that the cartridge top opening slips over the housing center post. Gently thread the bowl to the right onto the housing. Use the filter wrench supplied with the unit to gently snug the housing closed.

- Install the ***right (#3)*** cartridge using the same care as above.

- Install the ***middle (#2)*** cartridge using the same care as above.

5.4 Applying Water Pressure and Bleeding Air

- Slowly turn on the water supply to the unit and correct any leaks at the supply connections. Water will fill the ***left (#1)*** bowl, then the ***middle (#2 bowl)*** and the ***right (#3 bowl)*** in sequence. While the pressure on the unit slowly increases to supply pressure inspect bowl seals for leaks. If a leak develops, turn off the water supply, release the pressure from the system and then loosen the bowl to inspect the o-ring and reseat, then repeat the steps above. If the leak persists or other leaks develop in the unit's plumbing, please contact customer service (see section 11.0, Requesting Service).
- **For Ultrafilter option**, it is necessary to bleed of the air in the in-line filter. Filter is located in the top portion of the system. Remove the top cover and bleed air of ultrafilter as stated in section 5.6

- If there are no leaks, re-install the black front panel (bent edge down and facing you), the stainless steel basin grill, and the PVC top cover with the six (6) phillips head screws.

5.5 Applying Electrical Supply

- The electrical outlet supplying the Gemini should be properly grounded and fused and not be able to be switched off during facility vacancies.

- Plug in the Gemini. The digital display will come on indicating purity, and the ***"A" and "B"*** LED will alternate flashing.

5.6 "INITIAL POLISHING" of New Cartridges

NOTE: An initial rush of air will escape the system until the unit is completely filled with water. Some splashing may occur.

- Place a beaker or collection vessel on the grill directly below the dispensing nozzle. Press the ***"DISP"*** function key to purge the trapped air and to rinse the cartridges and housings. Press the ***"DISP"*** function key a second time to stop the flow of water once all the air has been purged from the system.

- For Ultrafilter option, top cover should be removed. In-line ultrafilter should be visable with two side port plugs. To bleed air in the ultrafilter, unit should be in the dispensing mode. With a towel present, slight loosen the coarse screw plug to bleed off air. Air should come out of the port with a small amount of water. Bleed until all air is removed and tighten plug. Note, avoid over-tightening plug as it is a coarse thread. Remove power and clean up any water that is present. Re-install top cover and power up unit and proceed.

- Press the ***"MODE"*** function key. The ***"A"*** LED will light continuously, the polishing pump, ***"R1"*** LED and the UV light, ***"FI"*** LED will come on. The unit is in the ***"INITIAL POLISHING"*** mode and the pump will run for 2 hours. This will allow the system to polish and rinse the system components with high purity water. After recirculating for two (2) hours, the system will automatically change to its ***"NORMAL"*** operating mode.

- During the **"NORMAL"** operating mode, the polishing pump and the **"R1"** LED will come on every 10 minutes and run for 2 minutes (minimum pump running time) to polish the water and keep it up to the highest purity. Then the pump will shut off and relax until the next cycle.

- In the **"NORMAL"** operating mode, pressing the **"DISP"** key will initiate the polishing cycle (the pump comes out of the relaxed state) and the Gemini will dispense ultrapure water as indicated by the **"DI"** LED. Press the **"DISP"** key a second time to stop dispensing water.

- We recommend a sample be collected in an appropriate sterile sample container and tested for water purity. Periodic laboratory water testing to confirm the effectiveness of the treatment process is the owners' responsibility.

5.7 Manual Dispensing of Water

- Press the **"DISP"** to start and stop dispensing water.
- Pressing the **"1,2,3 or 4"** batch buttons will automatically dispense the programmed amount of water as set by the user. SEE SECTION 5.8 for BATCH PROGRAMMING INSTRUCTIONS.

5.8 Programming and Dispensing a Batch of Water

PROGRAMMING A BATCH

- Press the **"MODE"** key once and the **"C"** LED will flash. This indicates that you are now in the batch programming mode
- Push any batch button to start the flow of water.
- Dispense the desired amount of the batch.
- Push the batch button a second time to stop the flow of water and lock in the batch.
- All 4 batch buttons may be programmed in the **PROGRAMMING** mode.
- Press the **"MODE"** key once to return to the **NORMAL** operating mode. The **"A"** LED will be light continuously in the normal operating mode.

USING A BATCH

- Press the desired batch to dispense, "**1,2,3 or 4**"
- The GEMINI will automatically dispense the preprogrammed quantity of water.

5.9 Entering the SERVICE Mode

- Push and hold **MODE** button for 5 seconds to enter maintenance mode.
- LED **"B"** flashes indicating that the unit is in the Maintenance Mode.
- All unit operations are off upon entering the maintenance mode.
- The UV light, LED **"FL"** is off at all times in the maintenance mode.
- DISP key toggles solenoid valve on and off
- RECIRC key toggles pump on and off

6.0 DISPLAY AND KEYPAD FUNCTIONS

Be sure you understand the function of each key before using them.

- Function Keys:

"DISP" Single key ***"DISPENSING"***: In ***"NORMAL"*** operating mode, pressing this key will start the polishing pump and ***"DISPENSE"*** ultrapure water

"RECIRC" Press to start/stop the ***"POLISHING"*** pump when the unit is in ***"MAINTENANCE / SERVICE"*** mode.

"1,2,3,&4" User programmable batch dispensing modes.

"FLUSH" (For future enhancements).

"MODE" Press to step through operating modes. Push and hold for 5 seconds to enter the "**SERVICE**" mode.

- LED Indicators:

"DI" on when the ***"DISPENSING"*** solenoid valve is energized.

"R1" on when the ***"POLISHING"*** pump is running.

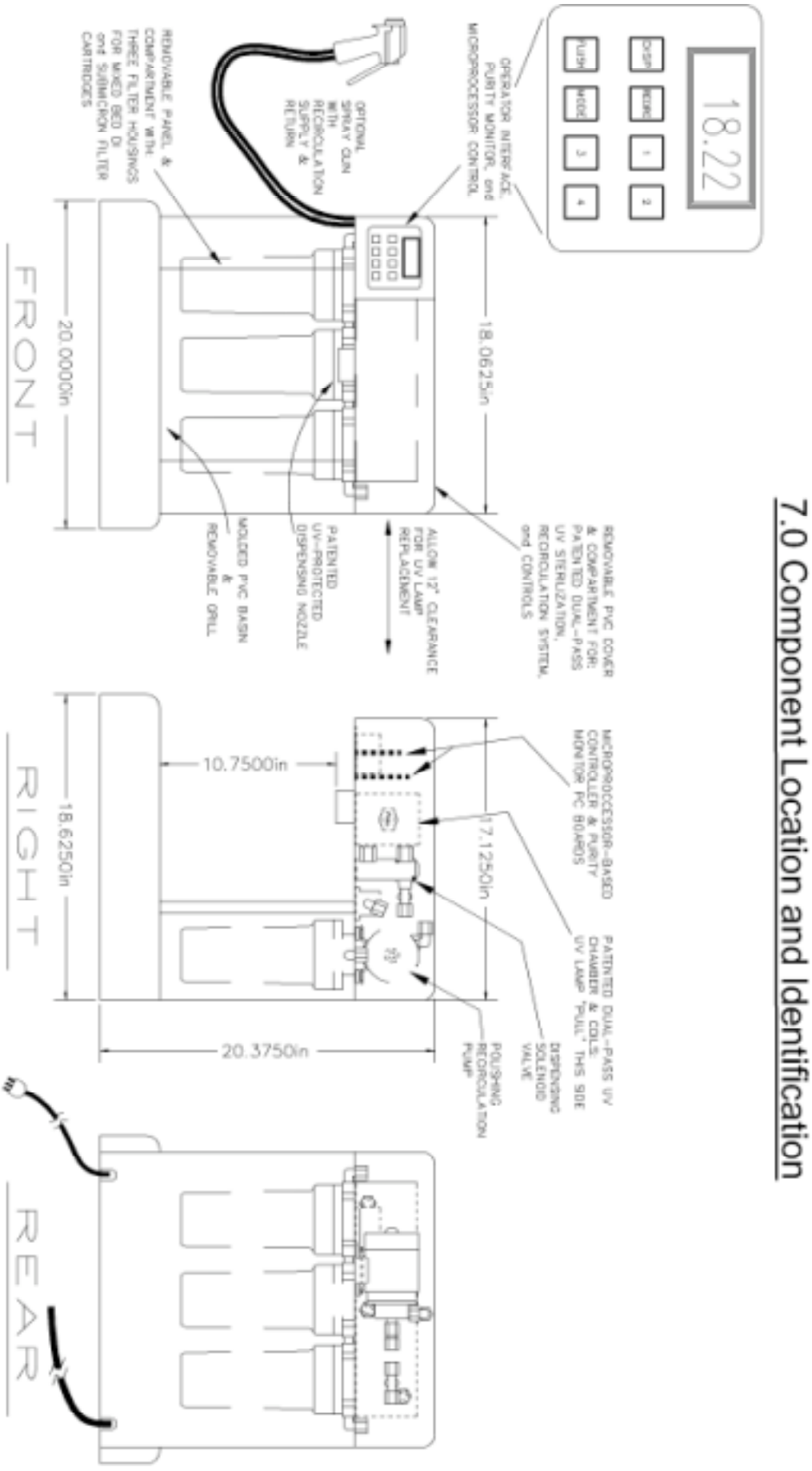
"A,B,C " indicates which MODE the unit is in.

LED	STATUS	MODE
A and B	ALTERNATING / FLASHING	INITIAL POWER UP / POWER LOSS
A	ON	NORMAL OPERATING MODE
B	FLASHING	SERVICE / MAINTENANCE MODE
C	FLASHING	BATCH PROGRAMMING MODE

"FL" on when the "**UV lamp**" in energized.

"R2" on when in the "**SERVICE**" mode

7.0 Component Location and Identification



8.0 MAINTENANCE

This unit was designed and manufactured to have the ability to produce the purest water that can be obtained for laboratory usage. It purifies water that meets or exceeds the specifications recommended by CAP, ASTM, for Type I Reagent Grade Water when it is operated and maintained according to these instructions.

- The ultraviolet lamp must be changed once each year.
- The resin cartridges must be replaced when the purity meter indicates the water purity is below your requirements.
- The dispensing system must be sanitized if HPC tests indicate unacceptable bacteria counts or at preventative maintenance intervals such as annually or semi-annually.
- It is recommended to replace sub-micron filters and ultrafilters at scheduled intervals not to exceed one year.
- The basin area below the stainless steel grill should be cleaned regularly to prevent odors even if the ***BASIN DRAIN KIT*** or ***BASE CABINET and WASTE TANK*** *options* are installed.
- If the unit is equipped with the *optional* **WASTE TANK**, it must be emptied when full.
- The exterior surfaces may be wiped clean with a mild detergent and a soft cloth to keep the unit clean and new looking.

8.1 Changing the UV Lamp

WARNING!! ELECTRICAL SHOCK HAZARD

Before removing the top PVC cover, disconnect the power cord. **FAILURE** to do so could result in electrical shock or personal injury.

Hold the UV lamp by the plastic ends ***ONLY. DO NOT*** touch the glass. Finger prints and oils from your hands will etch the glass and reduce UV life & performance.

If the lamp should become oily or dirty, clean it with a clean soft tissue or cloth wetted with isopropyl alcohol.

- It is not necessary to turn off the water supply to replace the lamp.
- For convenience, the UV lamp may be turned off by advancing the control to the **"MAINTENANCE"** mode. However for safety, to prevent electrical shock it is advisable to unplug the unit when changing the UV lamp.
- Remove the top cover by removing the six (6) phillips head screws that attach it to the top platform. Gently lift the top cover up and left, and set it aside.
- Grasp the UV lamp by the plastic end on the right side of the UV chamber and pull the lamp to the right until it is removed from the unit. It can then be discarded like any light bulb.

8.1 Changing the UV lamp (continued)

- Using the plastic end as a handle, carefully remove the new UV lamp from its protective package. Holding the lamp so that the 4 metal prongs are on the left, slide the lamp into the 3/4" hole on the right side of the UV housing. Gently guide the lamp fully into the housing, up onto the lamp guide (far side), and into the socket. The bulb may have to be rotated that the 4 prongs match up with the bulb connector.

- Replace the top cover.

- Plug the unit in (or turn the UV on by advancing to the **"NORMAL"** mode) and confirm that the lamp is lit by observing the dispensing spout for a blue-purple glow. If it is not lit, the lamp probably is not seated into the socket. Repeat the steps above to assure correct seating.

8.2 Replacing the Resin and Filter Cartridges

The cartridges are expendable items which have a finite capacity to deionize and polish the water. When the digital display indicates the purity is less than your minimum requirements, the DI resin cartridges have exhausted their capacity to perform.

- Disconnect or turn off the water supply and push the **DISP** key until water no longer dispenses to relieve water pressure within the system.

- Remove the stainless steel basin grill and set it aside. Remove the black front panel by pulling the bottom out and up (it is held in place with four (4) magnetic catches), and set it aside. This accesses the water purifying cartridge compartment.

- Locate and replace the DI resin cartridges for your system **(refer to sections 5.3 Installing the Water Purifying Cartridges and 5.4 Applying Water Pressures and Bleeding Air)** for procedure and sequence to open, load, and purge air from the filter cartridge housings.

- **For Ultrafilter option**, top cover must be removed to gain access to the filter. Remove in-line filter and replace with new filter. Follow steps as stated in sections 5.4 and 5.6.

- The used cartridges may be disposed of in the same manner as any water filter cartridge.

Section 9: SANITIZATION

CAUTION

Prior to sanitizing the GEMINI, it is important to become familiar with the owners manual sections 5.0 & 8.0 for the correct method of cartridge removal and replacement and bleeding air from cartridge housings. Always use protective gloves and eye wear when handling chemicals, and carefully read labels and warnings on chemical packaging.

The GEMINI with its' multi-pass UV protection is virtually bacteria free, however it is recommended that periodic sample testing be performed to assure that the GEMINI components continue to control bacterial levels. Filters and DI cartridges can be breeding grounds for bacteria, whether required or not these cartridges and the UV lamp should be replaced at least once per year to prevent any bacterial growth from exceeding the kill rate of the UV system.

Should the Gemini dispensing system require sanitizing as determined by unacceptable bacteria levels in the dispensed water or to satisfy regular FDA requirements, a *sanitization kit* is available that allows the user to introduce a sanitizing solution into the system while it recirculates to sanitize all wetted components.

KIT CONTENTS: sanitizing instructions, sanitant recirculation tank, sanitizing solution with MSDS sheet, sanitant test strips and disposable gloves.

SANITIZATION PROCEDURE

1. FILL SANITIZING TANK: Prior to sanitization, use the GEMINI to fill the sanitization tank approximately half way with DI water, and set the tank aside.

2. ENTER MAINTENANCE MODE: Press and hold the ***"MODE"*** **KEY** for five seconds to enter the ***"MAINTENANCE"*** mode. In this mode, the UV lamp is disabled so that the UV lamp will not degrade the sanitizing solution, and both the recirc pump and dispensing valve are set into a toggling (*ON-OFF)* mode so each may be operated independently by pressing the corresponding ***"DISP"*** or ***"RECIRC"*** **KEYS**.

3. DE-PRESSURIZATION & CARTRIDGE REMOVAL: Sanitizing solutions are not compatible with the DI and final filter cartridges and therefore these filters must be removed during sanitization. Close the supply water isolation valve and press the ***"DISP"*** **KEY** to relieve system pressure until no water dispenses. Remove the basin grille and filter access door (held in place with magnetic catches, then remove the cartridge bowls and cartridges (note the order of cartridges left to right). Though we recommend cartridge replacement after sanitization, if the cartridges are not exhausted and will be re-used, be sure to handle them with sterile gloves and store them in sterile plastic bags to prevent contamination, and label each cartridge as it is removed (#1, #2, #3) for correct relocation.

4. RE-FILL & BLEED AIR: After removing the cartridges, replace the bowls. Open the feed water valve and open the dispensing valve to purge air from the bowls.

Sanitization Procedure Continued

5. Replace the front panel and grill, and place the *sanitizing tank* on the grill directly below the dispensing nozzle. The tank should be half-full from step one. Close the feedwater supply valve and disconnect the *female tubing quick-connector* from the Gemini water supply. Connect the female Gemini supply fitting to the *male connector* on the *sanitizing tank*.

6. Press the ***"RECIRC"*** **KEY** to start the pump and recirculate the water in the system. Then press the ***"DISP"*** **KEY** to continuously dispense the recirculated water into the *sanitizing tank* and draw water back through the unit.

7. While the system is recirculating the water measure 40 ml of *sanitizing solution* and pour it into the wide mouth *sanitizing tank*. Allow the solution to circulate for two (2) hours, see step 10.

8. After 1 hour, use a sanitizer strip to check for sanitant. If sanitant is not present, return to step 6. If santant is present, continue recirculating for an additional hour.

9. When sanitization is complete, press the ***"DISP"*** **KEY** to stop dispensing to the tank, and the ***"RECIRC"*** **KEY** to stop the pump.

10. Disconnect the tubing from the tank. Remove the tank and dispose of the *sanitizing solution*.

11. Remove the three housing bowls and dispose of the *sanitizing solution*, then replace the bowls.

12. Connect the unit to the feed water supply. Open the feed water isolation valve slowly and allow the system to fill. Press the ***"DISP"*** **KEY** to purge any air form the unit and dispense approximately 5 liters of water to rinse the system of *sanitizing solution*.

13. Press the ***"RECIRC"*** **KEY** to start the pump and recirculate the rinse water through the system. Allow the pump to run for 5 minutes. Press the ***"DISP"*** **KEY** to dispense another 5 liters of rinse water.

14. Use the s*anitizer-residual test strips* supplied with the kit to verify that no residual *sanitizing solution* is being dispensed, and rinse if necessary.

15. After all traces of *sanitizing solution* are gone, stop the pump, close the supply valve, and press the "DISP" **Key** to depressurize the system.

16. Remove the housings and re-install the cartridges. ***Refer to sections 5.3 and 5.4 for the proper cartridge loading and purging air information.***

17. Press the ***"MODE"*** **KEY** to advance to the ***"NORMAL"*** operating mode (the ***"A"*** **LED** is on & the ***"B"*** **LED** is off).

10.0 OPTIONS & ACCESSORIES

The following options & accessories are supplied as kits and include detailed instructions for assembly onto the basic design

The use of attachments or accessories not approved by this manufacturer may adversely affect the water purity or cause appliance damage and void the warranty.

For questions regarding these and other options & accessories that may be available for system specific needs, or for components to aid installation, please contact an authorized dealer in your area or contact the factory.

HPA-001, Dispensing gun and tubing kit - Fully recirculating gun for remote dispensing with concentric coiled tubing. Gun is equipped with a standard .2 micron final filter for bacterial removal. A .05 micron Pyrogen removal filter is also available.

HPA-002, 185 nm UV combination for Bacterial and TOC reduction - Mounted external to the GEMINI unit a stainless steel, electropolished UV chamber is plumbed into the recirculation loop. The 185 nm wavelength is especially good at TOC destruction.

HPA-003, 185 nm Replacement bulb for the combination Bacterial and TOC reduction.

HPA-004, 254 nm Replacement bulb for the GEMINI Multi-Pass system.

HPA-005, Sanitization kit - Kit includes the recirculating sanitant tank, sanitant, test strips and rubber gloves.

HPA-009, Sanitization Refill Kit (sanitization refill and test strips)

HPA-006, Wall Mounting Bracket - Wall kit intended to be mounted on a wall capable of supporting a minimum of 55 pounds.

AFK-006, Cartridge kit with 2 - Low TOC high purity DI filters and 1 - .2 micron filter

AFK-008, Cartridge kit with 2 – Low TOC high purity DI filters and 1 - .05 hollow fiber filter

AFK-009, Cartridge kit with 3 – Low TOC high purity DI filters (for GEMINI-110U)

PF -00-6505, In-line Pyrogen Ultrafilter 0.05 micron (for GEMINI-110U)

1200103, Replacement Pump,110 VAC

HPL-RO, Reverse Osmosis Pretreatment system for the Gemini. 100 GPD with 14-Gallon Bladder Tank

AFK-005, Cartridge kit for HPL-RO – 5.0 Micron Prefilter / GAC / 1.0 Micron Post Filter

AM-12-7010, Membrane for HPL-RO, 100 GPD TFC

Many other options and customizations are available for the Gemini. Please consult with the Dealer or Factory for additional options.

11.0 REQUESTING SERVICE

Before calling the factory to request service, search the troubleshooting guide below for symptoms which your unit exhibits, and verify the cause and possible remedies listed. If your symptom is not listed, or the remedy does not provide a cure, Contact:

ARIES FILTER WORKS
160 Cooper Road
West Berlin, NJ 08091
Phone: (856) 768-9600
Fax: (856) 768-9601
www.arieswater.com
Email: aries@resintech.com

and ask for a customer service representative.

Be prepared to provide the representative with the model number, serial number, date of purchase and any options that may have been purchased with or added to the unit after purchase (as recorded on page (1) of this manual.

Next be prepared to describe to our service representative the symptoms that the unit exhibits.

TROUBLESHOOTING GUIDE

SYMPTOM	CAUSE	REMEDY
Display is off.	No power to the unit.	Check the unit is plugged into a live outlet. Check the unit's fuse - replace it if it is blown.
Unit blows fuses.	An electrical short exists in the unit.	Return the unit to the factory for repairs.
Unit will not dispense water.	Supply water is not on.	Confirm that the supply water is turned on.
	The purity is below the set point.	Allow the purity to rinse up to above the set point or replace DI cartridges.
	A filter cartridge is loaded with particles and plugged.	Replace the filter cartridge.
	System is bound with air	Bleed off canister &utlrafilters

(continued next page)

11.0 TROUBLESHOOTING GUIDE (continued)

SYMPTOM	CAUSE	REMEDY
Display indicates water purity is below set point.	The supply water is improperly treated. The resin cartridges are not seated. Resin is exhausted.	Test the supply water TDS add additional treatment. Open cartridge housing and reseat cartridge. Install fresh cartridges.
Resin cartridges exhaust quickly.	The supply water is improperly treated.	Test the supply water TDS. Add additional pretreatment to obtain higher quality.
Sub-micron filter plugs rapidly.	The supply water has colloids and is improperly treated.	Perform a Silt Density Test. If it is higher than 1 add additional pretreatment.
Bacteria exceeds operating specifications.	UV lamp is not working.	Confirm that the lamp is seated in the socket. Confirm that the lamp is not burned out. Confirm that the lamp has not been in service for more than one (1) year. Replace the lamp with a new one.
Bacteria exceeds operating specifications.	The system is fouled with contaminants. The feed water supply is grossly fouled.	Autoclave the sub-micron cartridge. Sanitize the feed water supply. Replace the resin cartridges with fresh new ones.
Pyrogen levels are excessive after the optional ultrafilter.	The ultrafilter is contaminated.	Sanitize the UF.

12.0 REAGENT GRADE WATER

	CAP			ASTM				NCCLS		
	Type I	Type II	Type III	Type I	Type II	Type III	Type IV	Type I	Type II	Type III
Specific Conductance (micromho/cm., max)	0.1	0.5	10	0.06	1.0	0.25	5.0	0.1	0.5	10
Specific Resistance (megohms-cm, min)	10	2.0	0.1	18.0	1.0	4.0	0.2	10	2.0	0.1
pH @ 25_ C (*)	*	*	5.0 8.0	*	*	* *	5.0 8.0	*	*	5.0 8.0
Silicate, Soluble (Ig/L, max)	50	100	1000	3.0	3.0	500	N.L.	50	100	1000
Culture/Colony Count cfu/mL (**)	10	10^3		**	**	**	**	10	10^3	
Total Organic Carbon (TOC), max, Ig/L				100	50	200	N.L.			
Sodium, max, Ig/L				1.0	5.0	10	50			
Chlorides, max, Ig/L				1.0	5.0	10	50			

Note: CAP = College of American Pathologists
ASTM = American Society for Testing and Materials
NCCLS = National Committee for Clinical Laboratory Standards
EU = Endotoxin Units
N.L. = No Limit
* : The measurements of pH in Type I, Type II and Type III reagent water is meaningless and has been eliminated from the procedure, since the electrodes used in this test contaminate the water.
** : When bacteria levels need to be controlled, reagent grade types should be further classified as follows: Microbiological contamination: Max heterotrophic bacteria count Type-A 10/1000 mL, 0.03 EU, Type-B 10/100 mL, 0.25 EU, Type-C 100/10 mL.

References : CAP Reagent Water Specifications, 1985, pg 5, 11.
NCCLS Document C3-A2, Vol. 11, No. 13, Pg 8.
Annual Book of ASTM Standards, 1992, Vol. 11.01, D1193-91, Pg 45.

13.0 WARRANTY

Systems and options have a one-year warranty from the date of purchase. If any component fails to function normally within the first year, return the unit to the factory prepaid. If in the opinion of the factory, failure was due to defects in materials or workmanship, repair or replacement will be made without charge. A reasonable service charge will be made for diagnosis or repairs not covered by this warranty. ARIES / ResinTech, Inc.assumes no other responsibility or liability.

This warranty does not cover any product which has been subject to misuse, neglect, accident or used in violation of operating instructions nor does it extend to any units altered or repaired for warranty defects by anyone other than ARIES / ResinTech, Inc.

IN NO EVENT SHALL ARIES / RESINTECH, INC. BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL, SPECIAL, INDIRECT, PUNITIVE OR EXEMPLARY DAMAGES OR LOST PROFITS FROM ANY BREACH OF THIS WARRANTY OR OTHERWISE.

ARIES / ResinTech, Inc., reserves the right to make changes in design, specifications and prices without notice.